

CLAIMS

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1. A perpendicular magnetic recording medium comprising at least a perpendicular magnetic recording layer and a backing layer backing said perpendicular magnetic recording layer, said backing layer having an
10 in-plane magnetization,

characterized in that said backing layer is formed of a ferrimagnetic material having a compensation temperature in the vicinity of a recording/reproducing temperature in which reproducing
15 of magnetic information is made from said perpendicular magnetic recording layer.

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2. The perpendicular magnetic recording medium as claimed in claim 1, characterized in that said recording/reproducing temperature is $-20 - 100^{\circ}\text{C}$.

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3. The perpendicular magnetic recording medium as claimed in claim 1 or 2, characterized in
30 that said ferrimagnetic material is any of an alloy of GdFe system, an alloy of DyFe system and a garnet ferrite.

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4. The perpendicular magnetic recording

medium as claimed in claim 3, characterized in that said perpendicular magnetic recording layer is any of a single layer perpendicular magnetic film or a multilayer perpendicular magnetic film.

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5. A magnetic storage apparatus for
10 recording and reproducing magnetic information having a perpendicular magnetic recording medium, said perpendicular magnetic recording medium comprising at least a perpendicular magnetic recording layer and a backing layer backing said perpendicular magnetic
15 recording layer, said backing layer having an in-plane magnetization,

characterized in that said backing layer is formed of a ferrimagnetic material having a compensation temperature in the vicinity of a
20 recording/reproducing temperature,

said magnetic storage apparatus further comprises temperature changing means for heating or cooling said backing layer at the time of recording magnetic information to said perpendicular magnetic
25 recording layer such that a temperature of said backing layer is moved away from said compensation temperature.

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6. The magnetic storage apparatus as claimed in claim 5, characterized in that said temperature changing means of said backing layer comprises an
35 optical heating mechanism heating said backing layer with an optical beam at the time of recording said magnetic information to said perpendicular magnetic

recording layer.

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7. The magnetic storage apparatus as claimed in claim 5 or 6, characterized in that a single magnetic pole magnetic head is used for a recording head for recording said magnetic information to said perpendicular magnetic recording layer.

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8. The magnetic storage apparatus as claimed in claim 7, characterized by further comprising a return yoke for receiving said magnetic field of said recording head via said backing layer.

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9. The magnetic storage apparatus as claimed in claim 8 or 9, characterized in that a reproducing head is provided adjacent to said recording head for reproducing said magnetic information recorded in said perpendicular magnetic recording layer, said reproducing head uses a magneto-resistive sensor such as GMR, TMR, MR, and the like.

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